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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Srinath Hosur et al.
Serial No: 09/659,431
Filed: 9/8/2000
Art Unit: 2634
Examiner: S. Liu
Docket No.: TI-29648
Conf. No.: 4265
Customer No.: 23494

CERTIFICATION OF FACSIMILE TRANSMISSION

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FACSIMILE COVER SHEET

X	FACSIMILE COVER SHEET (1 SHEET)	___	AMENDMENT
___	NEW APPLICATION	___	EOT
___	DECLARATION	___	NOTICE OF APPEAL
___	ASSIGNMENT	X	APPEAL BRIEF (4 Pages)
___	FORMAL DRAWINGS	___	ISSUE FEE
___	INFORMAL DRAWINGS	___	REPLY BRIEF (IN TRIPLICATE)
___	CONTINUATION APP'N	___	
___	DIVISIONAL APP'N		

NAME OF INVENTOR(S): Srinath Hosur et al.	RECEIPT DATE & SERIAL NO.: **Serial No.: 09/659,431**
TITLE OF INVENTION: Spread Spectrum Multipath Combination	**Filing Date: 9/8/2000**
TI FILE NO.: **TI-29648** / DEPOSIT ACCT. NO.: **20-0668**	**Conf. No.: 4265**
FAXED: **10/31/2005**	
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ATTY/SEC'Y: **CHH/gs**	

Texas Instruments Incorporated
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appl.No.:	09/659,431	Confirmation No.: 4265
Appellant:	Hosur et al	
Filed:	September 8, 2000	
TC/AU:	2634	
Examiner:	Liu	
Docket:	TI-29648	
Cust.No.:	23494	

APPELLANTS' BRIEF

Commissioner for Patents
P.O.Box 1450
Alexandria VA 22313-1450

Sir:

The attached sheets contain the Rule 41.37 items of appellants' brief. The Commissioner is hereby authorized to charge the fee for filing a brief in support of the appeal plus any other necessary fees to the deposit account of Texas Instruments Incorporated, account No. 20-0668. A fee transmittal sheet is enclosed.

Respectfully submitted,

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Rule 41.37(c)(1)(i) Real party of interest

Texas Instruments Incorporated owns the application.

Rule 41.37(c)(1)(ii) Related appeals and interferences

There are no related dispositive appeals or interferences.

Rule 41.37(c)(1)(iii) Status of claims

Claims 1-9 are pending in the application with claims 4-9 allowed, claim 3 objected to, and claims 1-2 finally rejected. This appeal involves the finally rejected claims.

Rule 41.37(c)(1)(iv) Status of amendments

There is no amendment after final rejection.

Rule 41.37(c)(1)(v) Summary of claimed subject matter

The invention provides a method, useful in spread spectrum wireless communication (e.g., CDMA), of combining detected multipath signals (i.e., multiple paths from one transmitter antenna to one receiver antenna) using weightings derived from an eigenvector of the matrix of covariances of the detected multipaths. Application page 8, bottom 11 lines plus page 9, top 7 lines list the method steps with y(k) denoting the vector of detected multipath signals for time interval k (see last paragraph on page 5). The combining is the sum on page 9, line 3 where w_A is the eigenvector corresponding to the largest eigenvalue of the covariance matrix.

Rule 41.37(c)(1)(vi) Grounds of rejection to be reviewed on appeal

The grounds of rejection to be reviewed on appeal are:

(1) Claims 1-2 were rejected as anticipated by the Harrison reference.

Rule 41.37(c)(1)(vii) Arguments

(1) Claims 1-2 were rejected as anticipated by Harrison; the Examiner cited Fig.3 for combining multipath inputs with weightings.

Appellants reply that Harrison relates to transmissions from multiple antennas, and the multipaths from a single antenna are combined into the impulse response for the channel from that antenna to the receiver; see column 3, lines 1-3. That is, multipaths are not treated separately in Harrison; rather, Harrison deals with multiple transmitter antennas and thus multiple channels which are weighted for direction transmissions. In particular, the column 3, line 58 matrix $R_A = A^H A$ of correlations of impulse responses is an nxn matrix where n is the number of transmitter antennas. For a single channel with multipaths, Harrison has a 1x1 "matrix" R_A which is just the energy of the impulse response for the channel. Indeed, for one transmitter antenna the matrix A in column 3, lines 59-62 is the single column vector $\begin{bmatrix} \alpha_1(1) \\ \alpha_1(2) \\ \vdots \\ \alpha_1(M) \end{bmatrix}$ corresponding to the impulse response for channel 1, then the "matrix" is $R_A = \sum_j |\alpha_1(j)|^2$.

In contrast, the claim 1 matrix is of covariances of the multipath inputs, and the eigenvector is used to weight the multipaths for combination. Contrarily, Harrison has weights for the differing transmitter antennas for directional transmission, not for multipath combination. In short, Harrison is multiple channels, not multiple paths; the multiple paths for the channel from the ith antenna to the receiver antenna have been replaced by a single impulse response function $[\alpha_i(1), \alpha_i(2), ..., \alpha_i(M)]$. Consequently, claim 1 and its dependent claim 2 are not suggested by Harrison.

Rule 41.37(c)(1)(viii) Claims appendix

1. A method of multipath combining, comprising:

(a) forming at least one matrix of covariances of multipath inputs from a single receiver antenna;

(b) finding an eigenvector of said matrix; and

(c) combining said multipath inputs relatively weighted according to the components of said eigenvector.

2. The method of claim 1, wherein:

(a) said eigenvector is associated with a maximal eigenvalue of said matrix.

Rule 41.37(c)(1)(ix) Evidence appendix

none

Rule 41.37(c)(1)(x) Related proceedings appendix

none